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ABSTRACT

A 1974 survey sent to state agencies responsible for higher education in each of the fifty states, attempted to ascertain the state of the art of statewide management information systems for higher education. The survey requested information on seven areas of state level MIS: (1) the types of analytical tools, computer programs and systems being used; (2) the stage of development of each of these tools, programs and systems based on a five stage development process; (3) the organization developing the tools, programs and systems if different from the agency being surveyed; (4) a rating of the tools, programs and systems; (5) a brief explanation of items rated unsatisfactory; (6) the users of the tools, programs and systems; and (7) whether the tools, programs and systems were, in the opinion of the responder, considered to comprise an integrated information system. Of the 50 surveys sent there was an 86 percent return rate. The data provides some idea as to the relative progress of the various agencies in developing management information systems for higher education at the state level. (Author/KE)

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STATE-LEVEL MANAGEMENT INFORMATION SYSTEMS FOR HIGHEP EDUCATION: A SURVEY SUMMARY

April, 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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State-Level Management Information Systems
for Higher Education: Summary of a Survey

In mid 1974 a survey was sent out to the state agencies responsible for higher education in each of the fifty states.[1] The purpose of the survey was to ascertain the state of the art of statewide management information systems for higher education. The survey requested information on seven areas of state level MIS: (1) the types of analytical tools, computer programs and systems being used; (2) the stage of development of each of these tools, programs and systems based on a five stage development process; (3) the organization developing the tools, programs and systems if different from the agency being surveyed; (4) a rating of the tools, programs and systems; (5) a brief explanation of items rated unsatisfactory; (6) the users of the tools, programs and systems; and (7) whether the tools, programs and systems were, in the opinion of the responder, considered to comprise an integrated information system. Of the fifty (50) surveys sent out forty-three (43) completed surveys were returned for a return rate of 86%.

Stage of Development (See Exhibit B for definition of stages.)

An analysis of the data showed that 176 analytical tools, programs and systems were in some stage of development by the responding state agencies. Forty-one (41) of these products were in initial stage of development; twenty (20) in stage two; twenty-four (24) in stage three; thirty-seven (37) in stage four; and fifty-one (51) in stage five, which are considered to be fully implemented. Figure one shows the number of products in each of the various stages of development.

The survey responses indicate that seventy-eight (78) of the products utilized by the various state agencies were developed by the National Center for Higher Education Management Systems (NCHEMS). This is the highest number using products developed by someone outside of the state agencies. Of the seventy-eight (78) NCHEMS products, twenty-seven (27) are in initial stage one; ten (10) in stage two; fourteen (14) in stage three; thirteen (13) in stage four and thirteen (13) in the final stage five. The relatively lower number of NCHEMS products in the latter stages of development probably reflect the fact that NCHEMS was only established in 1970 and more recently established a statewide program concentrating on some programs at state level. Figure two shows a comparison of NCHEMS & Non-NCHEMS products by stage of development.

Figure Two

	Stage 1	(%)	Stage 2	(%)	Stage 3	(%)	Stage 4	(%)	Stage 5	(%)	Unknown	
Non-NCHEMS	19	(46)	12	(60)	13	(54)	25	(67)	43	(84)	2	(50)
NCHEMS	22	(54)	8	(40)	11	(46)	12	(33)	8	(16)	2	(50)
Total	41	(100)	20	(100)	24	(100)	37	(100)	51	(100)	4	(100)

Ratings

A three choice rating scale was used in the survey (i.e. unsatisfactory, satisfactory and excellent). The respondents indicated that one hundred ten (110) specific products were rated "satisfactory". Twenty-nine (29) products were rated "excellent" and eleven (11) products were graced as "unsatisfactory". None of the NCHEMS products received an "unsatisfactory" rating and five were regarded

as "excellent". Two types of products received more than one "unsatisfactory" rating in the non-NCHEMS group. These were in the area of student information systems and physical facilities. It should be pointed out however that these two areas were areas in which a relatively large number of products were being developed and in the case of physical facilities six received "excellent" ratings.

The most frequent explanations for the various unsatisfactory ratings included the lack of sufficient funds to develop, or refine, and the lack of flexibility for state level use. The latter comments were, as could be expected, directed frequently at programs developed primarily for institutional use.

Figure three shows the ratings received for the various products.

Users

The state agencies were asked to indicate the users of each tool or program and three choices were indicated on the survey form consisting of: (1) only the statewide agency; (2) institution or segments; and (3) both. Eighty-seven (87) responses indicated that both the state agencies and the institutions were the "users" of the products. Twenty-two (22) responses indicated that the "users" were the institution or segments. Thirty-four (34) products were used only by the statewide agency.

Figure Three shows the users of the various products.

An Integrated System?

The final question concerned the issue of whether the respondents considered the various products used by their state agency as part of a formally planned integrated information system that utilizes data generated by operational level programs to develop information that can be related meaningfully to the objectives or problems of the top decision-makers. Twenty-two state level higher education agencies consider their products to be part of an integrated management information system rather than separate computer programs.

Figure One
SWMIS Analytical Tools and
Programs by Generic Type

	Student Flow	Finance & Budget	Personnel	Phys. Fac.	Faculty	Academic Programs	Cost Study	MIS	Financial Aid	Student Info.	Data Bank
Stage 1	3	2	2	4	6	10	6	4	0	3	1
Own	0	2	2	2	2	2	1	3	0	3	1
NCHEMS	3	0	0	2	4	8	5	0	0	0	0
Other	0	0	0	0	0	0	0	1 (OASIS)	0	0	0
Stage 2	2	1	1	2	1	6	2	1	0	2	2
Own	1	1	1	1	1	2	0	1	0	2	2
NCHEMS	1	0		1	0	4	2	0	0	0	0
Other	0	0		0	0	0	0	0	0	0	0
Stage 3	5	0	0	2	2	5	7	1	1	1	0
Own	4	0	0	1	1	1	2	1	1	1	0
NCHEMS	0	0	0	1	1	4	5	0	0	0	0
Other	1 (Calif.)	0	0	0	0	0	0	0	0	0	0
Stage 4	0	0	1	9	4	9	5	0	3	4	2
Own	0	0	1	6	3	4	2	0	3	4	2
NCHEMS	0	0	0	3	1	5	3	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Stage 5	4	7	3	11	4	11	1	0	2	4	4
Own	4	7	3	8	4	6	1	0	2	4	4
NCHEMS	0	0	0	3	0	5	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Stage 6 (UNK)	1	0	0	0	0	0	0	0	0	1	1
Own	0	0	0	0	0	0	0	0	0	1	1
NCHEMS	1	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	15	10	7	28	17	41	21	6	6	15	10
Own	9	10	7	18	11	15	6	5	6	15	10
NCHEMS	5	0	0	10	6	26	15	0	0	0	0
Other	1 (Calif.)	0	0	0	0	0	0	1 (OASIS)	0	0	0

R.J.B.
4/23/74

Figure Three

Program/Tool/System	Ratings* Unsatisfactory	Satisfactory	Excellent	Users Only Agency	Institut. Segments	Both
NCHEMS IEP		5			3	2
" FAA		5			2	3
" FCIP		7	2	2	1	6
" ICLM		5			1	4
" PCS		11	2	2	1	8
" RRPM		10			3	6
" SFM		5		1	1	4
" CFP		3			1	2
" DED		7	1	1	1	6
NACUBO-Chart of Accounts		1				1
Own Stu. Flo Enrollment		6	4	4	1	2
Own Stu. Info. Sys.	2	3	1	1	1	4
" Fin./Budget		3	4	3	1	3
" Pers.		4		1	1	2
" Phys. Fac.	2	7	6	4		10
" Faculty	1	4	1	2		4
" Acad. Prog.	1	6	3	2		7
" Cost-Studies	1	4	1	1		4
" Con't. Ed.	1			1		
" MIS		1				1
" EEO		1		1		
" PMIS		1				1
" Tuition/Grants		1	1	2		
USOE-HEGIS				1		
SRG-Campus		2	1		1	2
Own Fin. Aid.			1	1		1
Data Bank	1	4		1		4
Admissions	1	1			2	
Calif. Stu. Flow		1			1	
OASIS	1					
Own Stu. Loans			1	1		
Own ICLM		2		2		

*Not all of the respondents provided ratings for the various tools, programs etc.

The Current State of Development in State-Level Management Information Systems

The data provided by the survey can also be used to provide some idea as to the relative progress of the various agencies in developing management information systems for higher education at the state level. A statewide management information system (SWMIS) for higher education could be defined as: (1) a formally planned, integrated information system that utilizes data generated by operational level programs to develop information that can be related meaningfully to the objectives or problems of the top level decision-makers; (2) consisting of analytical tools and/or programs encompassing the areas of finance, facilities, students, faculty, non-academic staff and academic programs; and (3) that all of these analytical tools or programs are at the fifth (final) stage of development (see Exhibit B for the definition of the fifth stage). When this definition is applied to the survey data only two states, Ohio and Tennessee, can be considered as having a SWMIS.[2]

A number of other states are well along in the development of their SWMIS and are likely to meet these criteria in the next few years. These states include Colorado, Georgia, Maine, New Mexico, North Carolina, Oklahoma, Oregon and Washington.

Figure Four shows the development of the various programs and analytical tools in each of the forty-three (43) responding states.

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[1] A copy of the survey instrument is attached, see Exhibit A.

[2] The State University System of Florida also has a very well developed management information system which probably meets this SWMIS definition however, the data provided by the University of Florida System was not in the format used in the survey instrument. Consequently, the information for Florida appears only sporadically in the various figures.

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Figure Four ***

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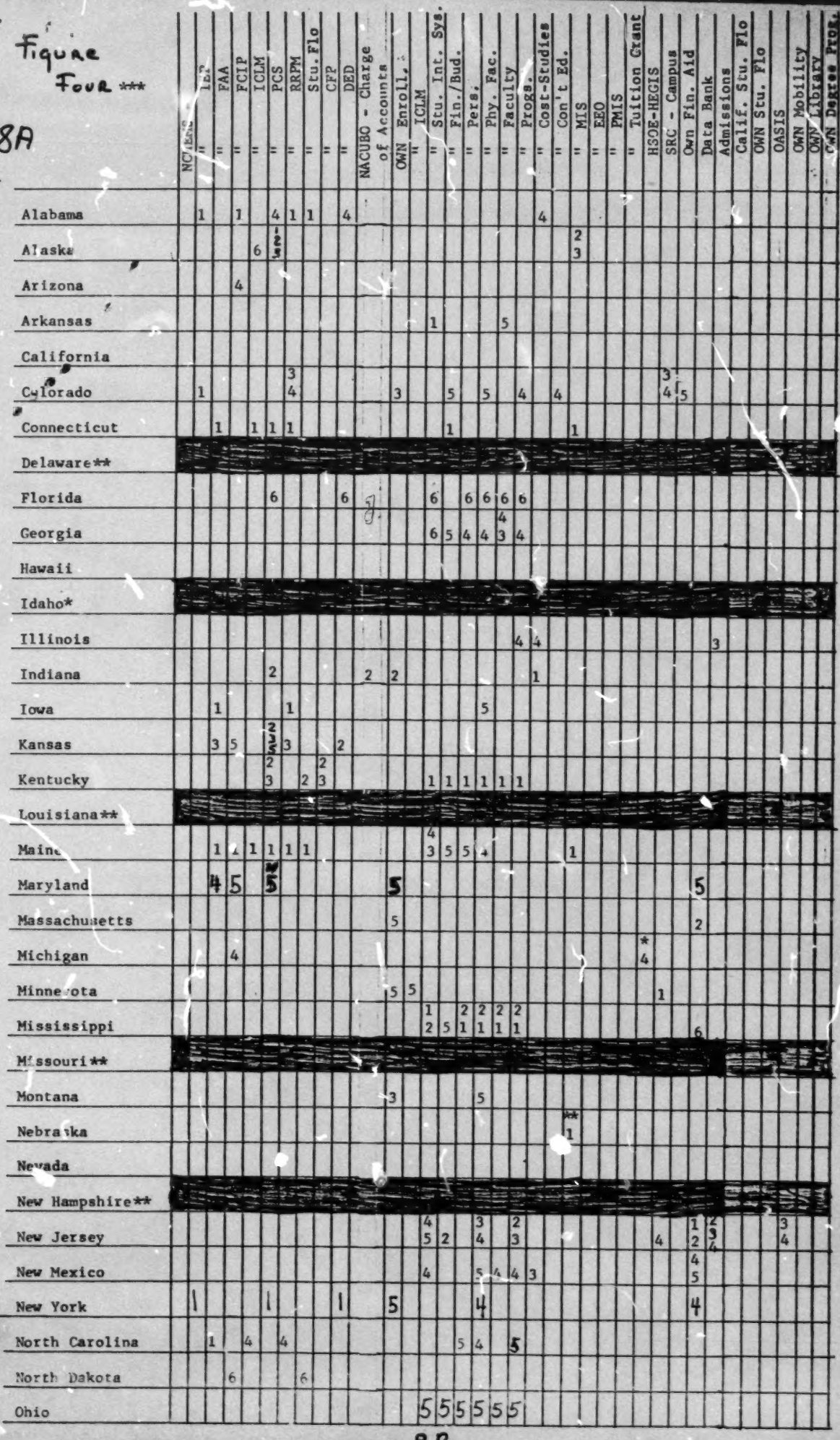

Figure Four Con't.

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	NCHEMS	IEP	FAA	FCIP	ICLM	PCS	RPPM	Stu. Flo	CFP	DED	NACUBO - Charge of Accounts	OWN Enroll.	" ICLM	" Stu. Int. Sys.	" Fin./Bud.	" Pers.	" Phy. Fac.	" Faculty	" Progs.	" Cost-Studies	" Con't Ed.	" MIS	" EEO	" PMIS	" Tuition Grant	HSOE-HEGIS	SRC - Campus	Own Fin. Aid	Data Bank	Admissions	Cal. Stu. Flow	OWN Stu. Loan	OWN OASIS	OWN MOBILITY	OWN Library	OWN Degree Prog.
Oklahoma										2		3		5	5		5		5									5	5			5				
Oregon		3		4	4	4	4			3							4													3					
Pennsylvania				5		4	2			3																									
Rhode Island																																			
S. Carolina**																																			
South Dakota**																																			
Tennessee				3									3	5			5	5	5	5			2		5				5						
Texas					1	1	1	1	1	1																									
Utah																																			
Vermont**																																			
Virginia				2										4			5	4									1								
Washington							3					3			5				5	3				5			3					5	5		
West Virginia																																			
Wisconsin					3	5	3			5								5					5												
Wyoming**																																			

*Task Force Being Formed to Consider Feasibility of MIS.
**This state does not currently have an MIS.
***Numbers refer to the stage of development, see Exhibit B for explanation.

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R.J. Barak
4/24/74

Exhibit A-1

SURVEY OF STATEWIDE INFORMATION SYSTEMS FOR POSTSECONDARY EDUCATION

(1.1) Name of Agency _____

(1.2) Address _____

(1.3) Person Completing Survey _____

(1.4) Date Completed _____

(2.0) Has your agency developed, or is it developing, any statewide computer programs planning tools, or systems for any area of postsecondary education? (2.1) Yes (2.2) No (circle one)

If answer to above is yes please complete the balance of the survey as appropriate.

If answer to above is no please stop and return survey to address below. Thank you.

Please complete section below as appropriate (Refer to attached codes and definitions as necessary).

(3.0) Type of program(s), tool(s) developed, or being developed (see examples on attached list).	(4.0) General area code (See code sheet attached)	(5.0) Stage of development (See code sheet attached)	Organization developing the program if other than your own	Rating of the instrument at this stage (check one) Unsatisfactory (7.0)	Satisfactory (8.0)	Excellent (9.0)	(10.0) If progress indicated is unsatisfactory please briefly explain why. (Identify and use attached sheet if necessary.)	(11.0) Is this program, tool, system used by: (check one) Only the Statewide Agency	Institution or segments	Board
(3.1)										
(3.2)										
(3.3)										
(3.4)										
(3.5)										
(3.6)										
(3.7)										
(3.8)										

(12.0) Do you consider the program(s) tool(s) etc. indicated above in item 3.0 to be seperate computer programs (individual analytical tools) or part of a formally planned integrated information system utilizes data generated by operational level programs to develop information that can be related meaningfully to the objectives or problems of the top decision-makers? (circle one) (12.1) Yes (12.2) No

(13.0) Comments:

Please return completed survey to:
Robert J. Barak, Director
Research & Information
State Board of Regents
Grimes State Office Building
Des Moines, Iowa 50319

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Exhibit B
Survey of Statewide Information Systems for Postsecondary Education
Stages of Development

1. Feasibility Stage is the stage of development in which it is being determined whether it is desirable or possible for financial, political, or other reasons, to develop instruments or programs capable of providing information in a given area, or areas.

This stage normally consists of organizing for the feasibility study; a search for a solution for a given problem or problems; a feasibility analysis, making a choice of a solution; and the specification of the user's requirements.

2. Design Stage. After having determined the gross specifications from the user's viewpoint, the next stage is where the details of design are specified for the construction of the system. The design stage also usually includes the selection of equipment and the design of forms, procedures, and organizational and personnel changes necessary for the operation of the program, tool or system.

3. Testing Stage. The testing stage is where the software and the hardware are tested (de-bugged) and the program(s), tools etc. are refined.

4. Operational Stage. The operational stage is where the program(s), tool(s) etc. have been refined and are being run on a regular basis and are being used for operational level decisions but for information only the statewide level.

5. Decision-Making Stage. This is the final stage of development. (Other than possible revisions.) It is at this stage where the information is used for decision-making purposes at the statewide levels.

6. Unknown.

R. J. Barak
4/25/74

Exhibit A-2

Survey of Statewide Information Systems for Postsecondary Education
Definitions, Codes and Examples

Examples of Planning Tools, Computer Programs, Types of System, etc.
(to be used in responding to item 3.0)

NCHEMS	Program Classification Structure
NCHEMS	Data Element Dictionary
NCHEMS	Resource Requirements Prediction Model
SRG	Campus
NCHEMS or Other	Student Flow Model
NACUBO	Chart of Accounts, etc.
NCHEMS	Cost Finding Procedures and Software
NCHEMS	Information Exchange Procedures and Analysis
-	Enrollment Forecasting System (Wnat procedures?)
-	Data Bank (What kinds of information are stored?)
NCHEMS or Other	Faculty Activity Analysis
NCHEMS	Facilities Classification Inventory Procedures
NCHEMS or Other	ICLM or IWLM

General Area Codes:
(to be used in responding to item 4.0)

1. Finance
2. Facilities
3. Student
4. Faculty
5. Non-academic staff
6. Administration
7. Academic programs
8. Other

Stage of Development
(to be used in responding to item 5.0)

1. Feasibility Stage is that stage of development in which it is being determined whether it is desirable or possible for financial, political, or other reasons, to develop instruments or programs capable of providing information in a given area, or areas.

This stage normally consists of organizing for the feasibility study; a search for a solution for a given problem or problems; a feasibility analysis, making a choice of a solution; and the specification of the user's requirements.

2. Design Stage. After having determined the gross specifications from the user's viewpoint, it is now necessary to specify the details of design for the construction of the system. The design stage also includes the selection of equipment and the design of forms, procedures, and organizational and personnel changes necessary for the operation of the program, tool or system.

3. Testing Stage. The testing stage is where the software and the hardware are tested (de-bugged) and the program(s), tools etc. are refined.

4. Operational Stage. The operational stage is where the program(s), tool(s) etc. have been refined and are being run on a regular basis and are being used for operational level decisions but for information only the statewide level.

5. Decision-Making Stage. This is the final stage of development. (Other than possible revisions.) It is at this stage where the information is used for decision-making purposes at the statewide levels.